

## Renewable Energy

### Overview

[Return to top](#)

Brazil is South America's largest clean energy market, generating nearly 80 percent of its electricity from renewable sources. Brazil's commitment to renewable energy is strong, driven by both its immense renewable energy resource potential and rising energy demand.

New clean energy investments in Brazil totaled \$5.34 billion in 2012, more than any other Latin American country. While no specific legislative targets exist, Brazil's "Ten-Year Energy Plan," published in 2011, envisions 18 GW of new, renewable energy capacity being brought online by 2020. Given Brazil's existing manufacturing capacity, meeting this target will require the use of both imported and domestically produced technologies. However, many of the Brazilian Government's incentives are geared towards supporting locally-sourced products, thus making export projections difficult.

According to the Brazilian National Energy Balance published by EPE (Energy Research Company), renewable energy in Brazil is registering an average annual expansion of 12%, with special emphasis on wind energy, biomass from sugarcane and small hydropower plants.

With growth occurring in almost every energy subsector, large-volume hydropower still accounts for the vast majority of Brazil's energy capacity. Large hydropower dams account for 84 GW of Brazil's total energy capacity. Other renewable energy technologies account for 15.8 GW of capacity, including 9.84 GW for biomass and waste-to-energy, 3.69 GW for small hydropower, and 2.46 GW of wind power.

Since the successful launch in 2002 of the "Program of Incentives for Alternative Energy Sources (PROINFA)," which resulted in 3.1 GW of new renewable energy generation, the Government of Brazil (GOB) has used a broad range of policies to encourage the deployment of renewable energy. These include guaranteed 20-year power purchase agreements, biofuel blending mandates, low-interest financing, and tax-based incentives.

In 2009, PROINFA was replaced by a reverse auction system, through which developers seeking to build renewable energy projects compete against proposed conventional energy projects in regular tenders. The reverse auctions have reduced the price paid by Brazilian consumers for renewable energy, as developers are incentivized to offer the lowest possible cost. The focus on price competition, however, has limited opportunities for solar or other higher priced technologies. Brazil has therefore held biomass- and wind-specific auctions to encourage the deployment of these technologies.

### Sub-Sector Best Prospects

[Return to top](#)

#### Wind

The wind energy capacity installed in Brazil's 108 wind farms reached 2.46 GW during 2012, an increase of 73% versus 2011. Wind energy increased to make up 2% of the country's energy matrix.

By the end of 2013, it is estimated that installed capacity nationwide reached 6.05 GW, and will increase to 8.8 GW by 2017.

While local content requirements and import tariffs limit the opportunity for exporting wind products, service exporters may find some opportunities working with developers of these projects. Wind resource mapping, wind turbine design, and assessing environmental impacts of wind farms should all provide opportunities for U.S. exporters.

Notably, Brazil does not currently manufacture small wind turbines, a market segment that enjoys considerable U.S. competitiveness.

### Solar

It is estimated that Brazil currently has about 20 MW of solar photovoltaic generating capacity installed, destined for the most part (99% as of 2011, according to the Atomic Energy Institute, or IEA) for supplying power to isolated and remote systems, mainly in situations where the extension of the electricity distribution network does not appear economically feasible. These systems are also used to power systems such as antennas and communications masts used for mobile phone networks and traffic radar systems.

Besides the high level of isolation, Brazil also has another important advantage: large deposits of silicon, the material used to manufacture solar panels. To take advantage, however, investment in technology is required; the country has not yet mastered the process for purifying the ore to the degree necessary to manufacture the panels.

In the first half of 2013 alone, Agencia Nacional de Energia Elétrica (ANEEL) received permit applications for 25 new solar projects totaling 967 MW. Since 2011, *Bloomberg New Energy Finance* reports that over 3.9 GW of solar permits have been requested. As these projects move to completion, some export opportunities should become available, although total solar exports to Brazil will remain limited into the medium-term.

### Hydropower

Brazil offers opportunities for U.S. hydropower exporters. Large hydropower dams still account for the vast majority of Brazil's energy capacity, accounting for 84 GW of Brazil's total energy capacity. However, legal disputes surrounding the Belo Monte hydropower plant, currently under construction in the Amazon region, are likely to hinder the development of future large hydropower projects.

Two market segments likely hold the most promise for U.S. exports through 2015: small and medium hydropower equipment, and hydropower services. Though Brazilian and Argentine suppliers dominate the large hydropower market, U.S. exporters enjoy considerable market share in the small and medium-sized hydropower market.

Brazil's hydropower reserves hit historically low levels in 2013. Ensuring that the country's existing facilities are producing the most power possible, either through

retrofits or system optimization, should provide American service exports with new opportunities.

## Challenges and Barriers to Renewable Energy Exports

The need for developers to offer electricity at the lowest possible cost makes importing renewable energy technology from the United States commercially difficult. As a result, to date most U.S. exports have been in the form of services and high value-added products that are not available domestically.

The situation is aggravated by significant import barriers. Brazil maintains a 14 percent import tariff on wind turbines, component parts for the wind industry, and hydropower turbines. It also charges a 12 percent tariff on imported solar equipment, both PV and thermal.

The most important challenge, however, pertains to financing. The lending practices of Brazil's development bank, *Banco Nacional de Desenvolvimento Econômico e Social* (BNDES), pose a significant hurdle to U.S. exports. BNDES plays a major role in financing Brazil's renewable energy growth and is among the largest lenders to the clean energy industry globally, disbursing nearly \$29 billion for renewable energy projects between 2007 and 2011.

While there is no explicit local content requirement for participation in Brazil's renewable energy power auctions, BNDES does use local content rules in determining which companies qualify for its low-cost credit. Since BNDES provides the most favorable financing terms, its financing therefore creates a *de facto* local content requirement for the Brazilian market. To illustrate this point, out of the 81 wind farms operating today in Brazil, only one has thus far been developed without BNDES financing – a project financed instead by the Chinese Development Bank and that used Chinese-manufactured turbines.

In December 2012, BNDES amended its local content requirements for wind projects, making them far more stringent. These requirements include a roadmap for compliance, with each phase requiring a higher percentage of local content. By 2016, BNDES aims to complete an entire Brazilian wind manufacturing value chain in-country – severely limiting the potential for wind product exports from the United States.

Some export deals are nevertheless possible, particularly when facilitated by Ex-Im Bank financing. Exporters will likely have to use similar methods to attract buyers, unless local content restrictions are removed or significantly weakened.

## Opportunities

[Return to top](#)

### Trade Events:

- **Brazil WindPower**; August 26-28, 2014 – Rio de Janeiro
- **Intersolar South America**; August 26-28, 2014 – São Paulo
- **Fenasucro/Agrocana**; August 26-28, 2014 – Sertãozinho
- **HydroVision Brazil**; October 21- 2014 – Sao Paulo

Government of Brazil:

- Brazilian Electrical and Electronics Industry Association  
[www.abinee.org.br](http://www.abinee.org.br)
- Eletrobras  
[www.elektrobras.com.br](http://www.elektrobras.com.br)
- EPE (Empresa de Pesquisas Energéticas)  
[www.epe.gov.br](http://www.epe.gov.br)
- Ministry of Mines and Energy (MME)  
[www.mme.gov.br](http://www.mme.gov.br)
- National Electrical Energy Agency  
[www.aneel.gov.br](http://www.aneel.gov.br)

For more information about export opportunities in this sector, please contact Industry Specialist Igly Serafim: [lgly.serafim@trade.gov](mailto:lgly.serafim@trade.gov)